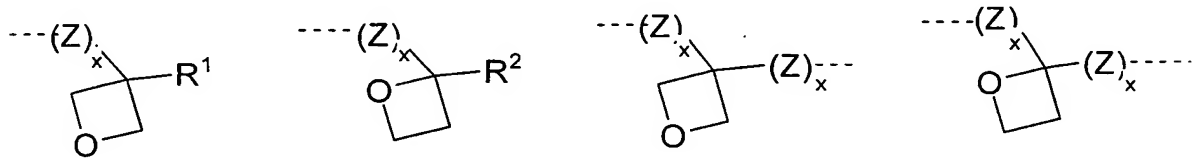
Patent Claims: C04006

1. Process for crosslinking oxetane-functionalised, organic semiconductors and conductors, initiated by at least one added onium compound and by irradiation, characterised in that the irradiation is carried out outside the absorption band of the onium compound.

2. Process according to Claim 1, characterised in that the irradiation is carried out at a wavelength at least 100 nm longer than the absorption maximum of the onium compound.

3. Process according to Claim 1 and/or 2, characterised in that the organic semiconductor or conductor is oligomeric or polymeric.

4. Process according to one or more of Claims 1 to 3, characterised in that at least one H atom in the organic semiconductor or conductor has been replaced by a group of the formula (1), formula (2), formula (3) or formula (4)



Formula (1) Formula (2) Formula (3) Formula (4)

where the following applies to the symbols and indices used:

R^1 is on each occurrence, identically or differently, hydrogen, a straight-chain, branched or cyclic alkyl, alkoxyalkyl, alkoxy or thioalkoxy group having 1 to 20 C atoms, an aryl or heteroaryl group having 4 to 18 aromatic ring atoms or an alkenyl group having 2 to 10 C atoms, in which one or more hydrogen atoms may be replaced by halogen or CN and one or more non-adjacent C atoms may be replaced by -O-, -S-, -CO-, -COO-, -O-CO-,

R^2 is on each occurrence, identically or differently, hydrogen, a straight-chain, branched or cyclic alkyl or alkoxyalkyl group having 1 to 20 C atoms, an aryl or heteroaryl group having 4 to 18 aromatic ring atoms or an alkenyl group having 2 to 10 C atoms, in which one or more hydrogen atoms may be replaced by halogen or CN and one or more non-adjacent C atoms may be replaced by -O-, -S-, -CO-, -COO-, -O-CO-,

Z is on each occurrence, identically or differently, a divalent group $-(CR^3R^4)_n-$, in which, in addition, one or more non-adjacent C atoms may be replaced by -O-, -S-, -CO-, -COO- or -O-CO-, or a divalent aryl and/or N-, S- and/or O-heteroaryl group having 4 to 40 C atoms, which may also be substituted by one or more radicals R^3,

R^3, R^4 are on each occurrence, identically or differently, hydrogen, a straight-chain, branched or cyclic alkyl, alkoxy, alkoxyalkyl or thioalkoxy group having 1 to 20 C atoms, an aryl or heteroaryl group having 4 to 20 aromatic ring atoms or an alkenyl group having 2 to 10 C atoms, in which one or more hydrogen atoms may also be replaced by halogen or CN; radicals R^3 or R^4 here may also form a ring system with one another or with R^1 or R^2,

n is on each occurrence, identically or differently, an integer between 0 and 30,

x is on each occurrence, identically or differently, an integer between 0 and 5,

with the proviso that the number of these groups of the formula (1) or formula (2) is limited by the maximum number of available H atoms of the organic semiconductor or conductor; the dashed bond here indicates the link to the organic semiconductor.

5. Process according to Claim 4, characterised in that at least one H atom in the organic semiconductor or conductor has been replaced by a group of the formula (1) according to Claim 4.

6. Process according to one or more of Claims 1 to 5, characterised in that the organic semiconductor has charge-transport properties and/or emission properties and/or blocking properties.

7. Process according to one or more of Claims 1 to 6, characterised in that the onium compound employed is at least one diaryliodonium, diarylbromonium, diarylchloronium or triarylsulfonium salt.

8. Process according to one or more of Claims 1 to 7, characterised in that the proportion of the onium compound in the mixture or in the layer is between 0.01 and 5% by weight.

9. Process according to Claim 8, characterised in that the proportion of the onium compound in the mixture or in the layer is between 0.1 and 2% by weight.

10. Process according to one or more of Claims 1 to 9, characterised in that the layer is post-treated after the irradiation.

11. Process according to Claim 10, characterised in that the layer is conditioned after the irradiation.

12. Process according to Claim 11, characterised in that the layer is conditioned in a temperature range from 50 to 250°C.

13. Process according to Claim 10 and/or 11, characterised in that the layer is conditioned for between 0.1 and 10 minutes.

14. Process according to one or more of Claims 10 to 13, characterised in that the layer is rinsed with a solvent after irradiation and where appropriate after conditioning.

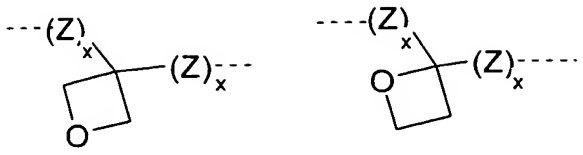
15. Process according to Claim 14, characterised in that at least one reducing agent and/or at least one weak base or a nucleophile is added to the solvent.

16. Process according to one or more of Claims 1 to 15, characterised in that the irradiation is carried out at a wavelength in the region of up to +/- 50 nm of the absorption maximum of the respective absorption band of the organic semiconductor.

17. Process according to one or more of Claims 1 to 20, characterised in that the duration of the irradiation is between 0.01 and 10 seconds at a light intensity of < 1 mW/cm^2.

18. Process according to one or more of Claims 1 to 17, characterised in that, in addition to the crosslinking, doping of the layer is produced at the same time by incompletely conditioning and/or rinsing the layer after the irradiation.

19. Compounds of the formula (3) and formula (4)



Formula (3)

Formula (4)

where the symbols and indices used have the same meaning as described under Claim 4.

20. Process for crosslinking and optionally simultaneous doping of oxetane-containing organic semiconductors, characterised in that at least one oxidant is added to the crosslinking reaction.

21. Process for the photosensitised doping of organic semiconductors or conductors by photoacids, characterised in that the irradiation is carried out outside the absorption band of the photoacid.

22. Organic semiconducting layers, characterised in that they have been produced by a process according to one or more of Claims 1 to 21.

23. Process for the production of organic electronic devices, characterised in that a process according to one or more of Claims 1 to 21 is used for at least one layer.

24. Organic electronic device, characterised in that it comprises at least one layer produced by a process according to one or more of Claims 1 to 21.

25. Organic electronic device according to Claim 24, characterised in that it is organic or polymeric light-emitting diodes (OLEDs, PLEDs), organic solar cells (O-SCs), organic field-effect transistors (O-FETs), organic thin-film transistors (O-TFTs), organic integrated circuits (O-ICs), organic optical amplifiers or organic laser diodes (O-lasers).